

# NIDIS Weekly Climate, Water and Drought Assessment Summary

Upper Colorado River Basin

November 16, 2010

# Precipitation and Snowpack

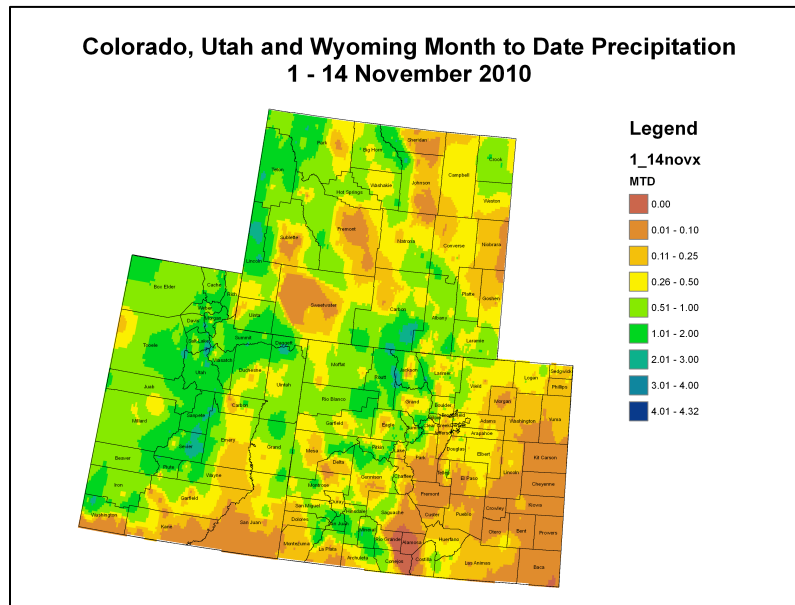


Fig. 1: November month-to-date precipitation in inches.

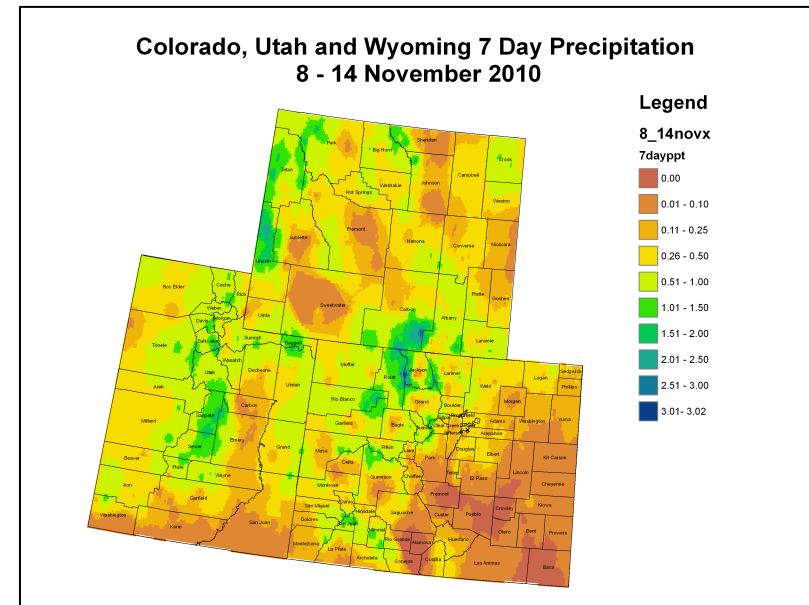


Fig. 2: November 8 – 14 precipitation in inches.

Most of the Upper Colorado River Basin (UCRB) received near or above average precipitation for the month of October. For the first half of November, good amounts of moisture have continued to fall throughout the Yampa-White and Colorado basins and in parts of the Lower Green River basin (Fig. 1). The Upper Green River basin has not received much precipitation for the month so far, and San Juan County, UT is also in a deficit for November. The Rio Grande basin and eastern plains of Colorado have received very little to no moisture for the month.

Last week, scattered showers covered much of the UCRB with the heaviest amounts, around 1 to 1.5 inches, in the northern mountains of Colorado and along the western boundary of the UCRB in Utah (Fig. 2). Areas of Sweetwater County, WY and San Juan County, UT only saw about a tenth of an inch of precipitation for the week.

Snotel WY Precipitation As Percentage of Average  
16 November 2010

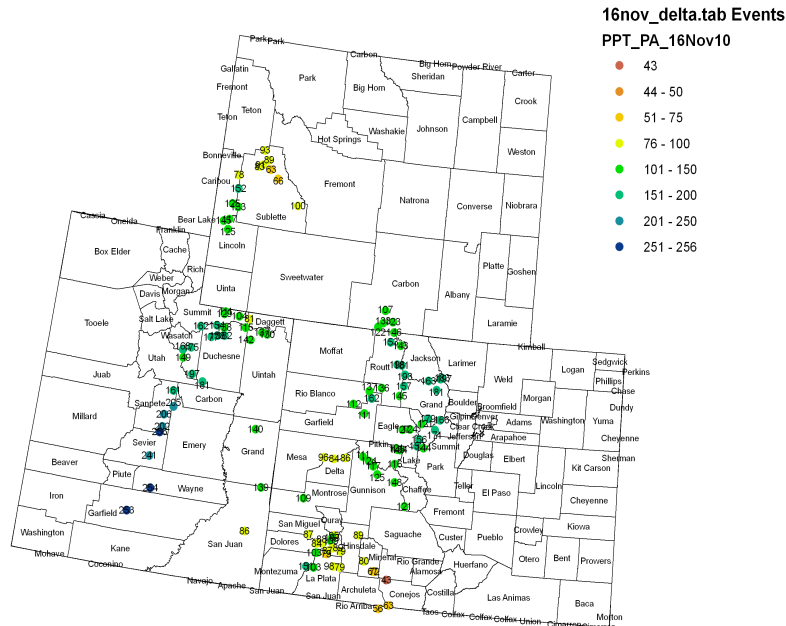


Fig. 3: SNOTEL WYTD precipitation percent of average.

Snotel WY Precipitation Percentile Ranking  
16 November 2010

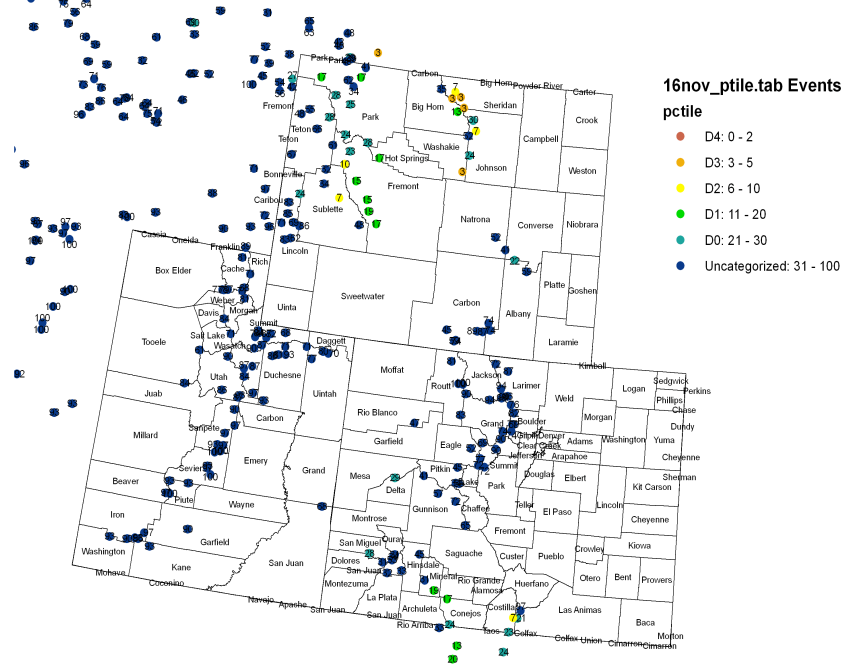


Fig. 4: SNOTEL WYTD precipitation percentiles (50% is median, 21-30% is Drought Monitor's D0 category).

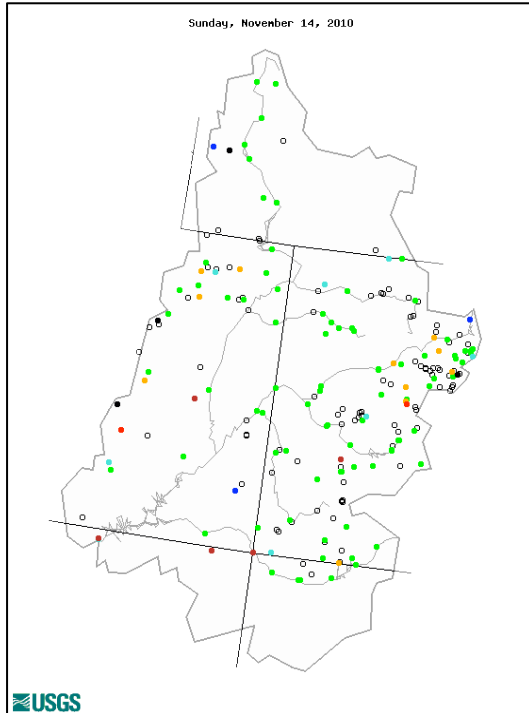
For most of the UCRB, SNOTEL water-year-to-date (WYTD) precipitation has been near or above average (Fig. 3). Around the Colorado headwaters region, WYTD percents of average are around 150%, and precipitation along the western boundary of the UCRB in Utah is around 200% of average. The lowest percents of average are in the San Juan basin (values around 80%) and in the Upper Green River basin (values around 80%).

Percentile rankings for the SNOTEL stations around the UCRB show most stations ranked fairly high (Fig. 4). Aside from a few stations in the Rio Grande basin and along the eastern border of the Upper Green River basin, most stations are showing percentiles in the 70s to 90s—meaning less than thirty percent of the water years on record have been wetter by this time. The lowest percentiles match up with the areas of lowest percents of average, meaning that it is rare for these areas to have such dry beginnings to the water year.

# Streamflow

As of November 14<sup>th</sup>, around 85% of the USGS streamgages in the UCRB recorded normal (25<sup>th</sup> – 75<sup>th</sup> percentile) or above normal 7-day average streamflows (Fig. 5). After a dry September and October, which forced many more gages to report below normal flows, conditions in the basin have improved. The Colorado headwaters region currently has the highest density of gages reporting below normal flows.

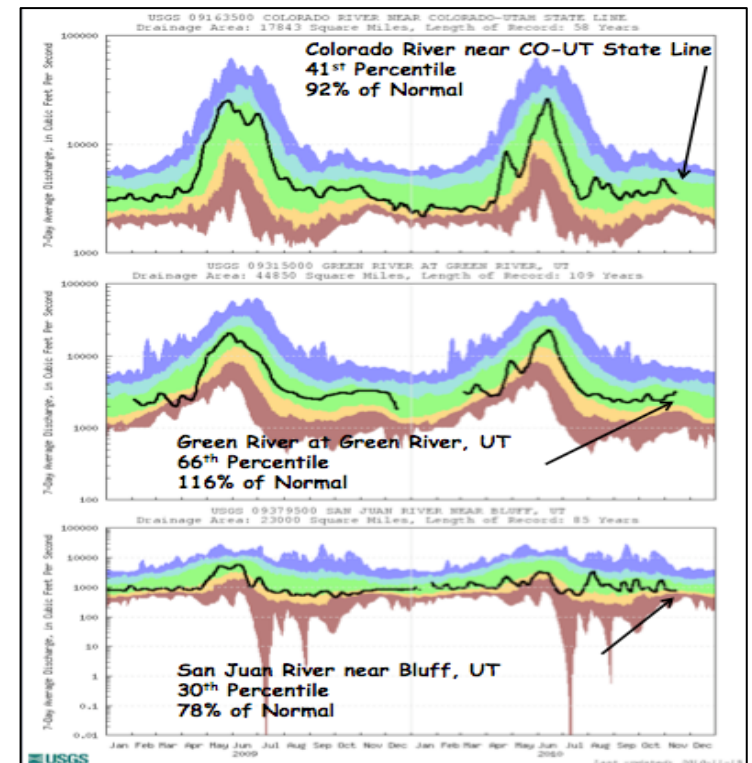
Looking at hydrographs from several sites around the UCRB, the recent improvements are evident on many of the rivers (Fig. 6). Both the Colorado River at the CO-UT state line and the Green River at Green River, UT are well within the normal range (92% and 116% of normal respectively). The San Juan River near Bluff, UT which had been struggling, has improved from 73% to 78% of normal in the past week. Though most gages are showing near normal flows, cumulative runoff for the calendar year is still below average for many areas.



Explanation - Percentile classes							
Low	<10	10-24	25-75	76-90	>90	High	Not-ranked
	Much below normal	Below normal	Normal	Above normal	Much above normal		

Fig. 5: USGS 7-day average streamflow compared to historical streamflow for November 14<sup>th</sup> in the UCRB.

Fig. 6: USGS 7-day average discharge over time at the CO-UT state line (top), Green River, UT (middle) and Bluff, UT (bottom).



## Water Supply and Demand

For the first week in many weeks, temperatures throughout the UCRB were below normal. The eastern plains of Colorado and eastern Wyoming also saw relief this week with below normal temperatures. VIC soil moisture continues to show very dry soils on the eastern plains of Colorado and Wyoming with near normal conditions throughout most of the UCRB (Fig. 7). Soil conditions near the four-corners region also look to be deteriorating, so this area should be monitored closely.

With the peak of the demand season behind us, most of the reservoirs in the UCRB have seen only minor fluctuations in levels over the past couple of weeks. This week, Lake Dillon, McPhee and Green Mountain Reservoirs saw lake level drops of less than 1,000 acre feet. Blue Mesa Reservoir saw an increase in its levels. Flaming Gorge, McPhee, Lake Granby and Navajo Lake are all above average for this time of year. Lake Powell dropped another 80,000 acre feet last week—these increased drops were planned for the month of November as releases fluctuate dependent on power generation. Lake Powell is currently 79% of average and 62% of capacity.

## Precipitation Forecast

The northern mountain ranges of CO and UT are currently in the midst of a decent orographic snow event. Widespread snow showers will continue over northern sections of the UCRB through tonight, with some activity spreading southward into the central and southern ranges of western Colorado. Quantitative precipitation fields show a bulls-eye of 0.5 inch liquid accumulation located over Jackson County, CO through the next 18 hours, with lesser amounts of 0.1 inches toward the San Juans. The atmosphere begins drying out by Wednesday evening as a ridge builds in from the west, which will keep the UCRB in dry conditions until this weekend. Expect to see snow showers begin to pop up over western Colorado/eastern Utah by Saturday as the next Pacific storm moves onto the west coast. This system has the potential to bring yet another period of extended snowfall to the Colorado mountains through the weekend and into early next week.

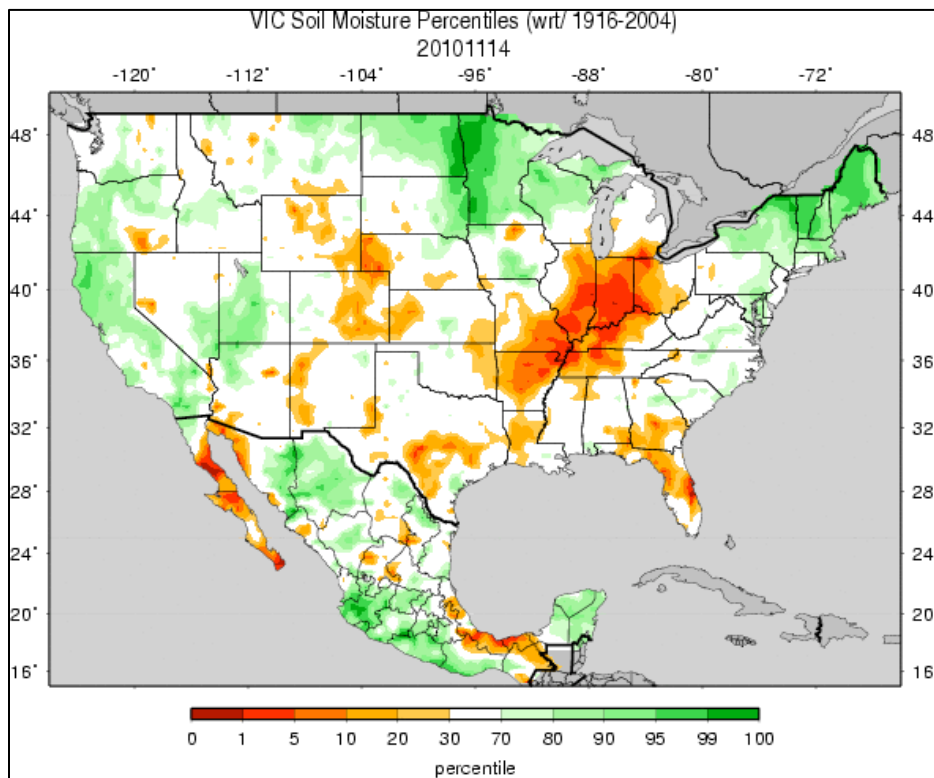


Fig. 7: VIC soil moisture percentiles as of November 14<sup>th</sup>.

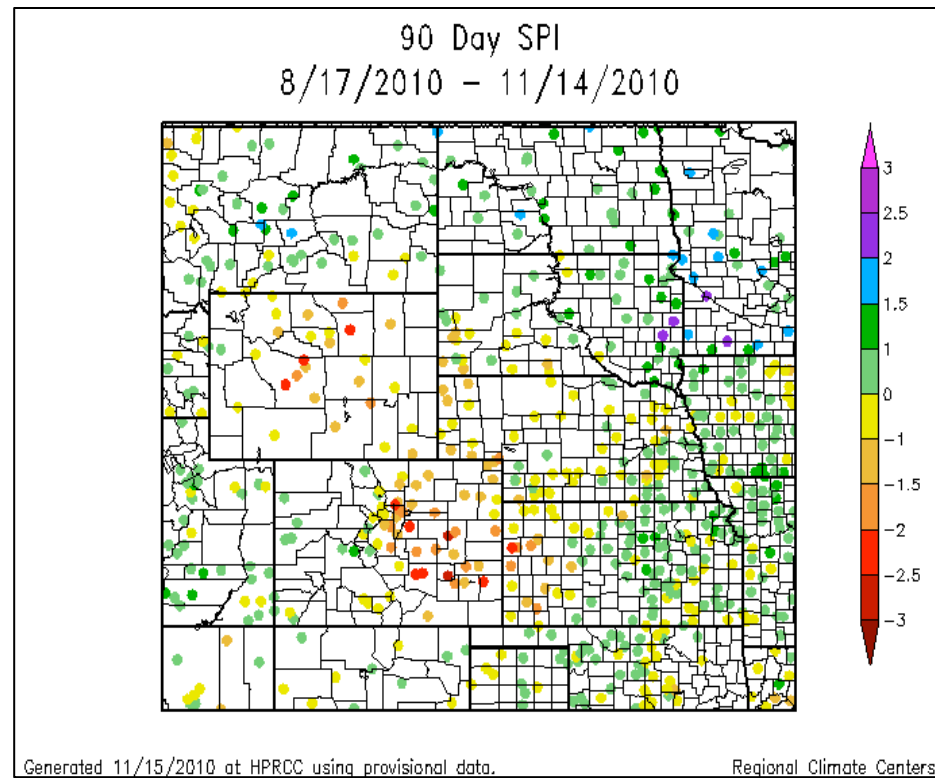


Fig. 8: 90 day standardized precipitation index.

# Drought and Water Discussion

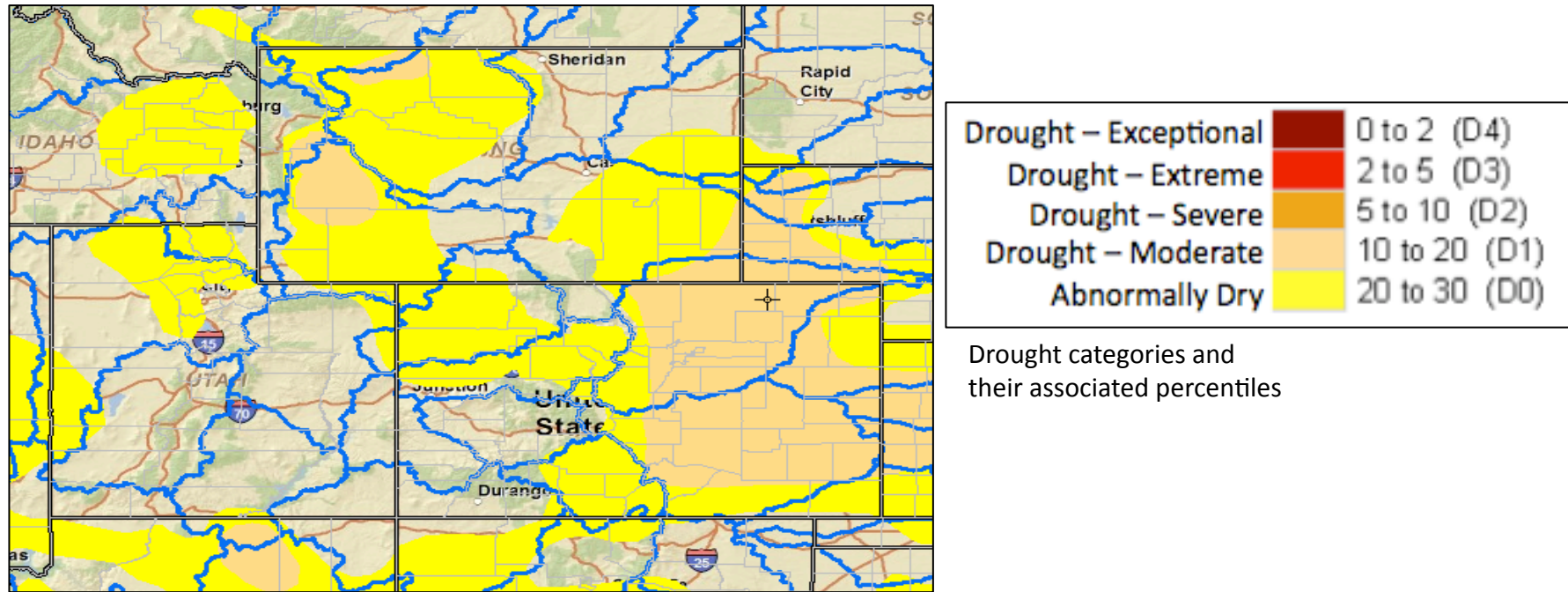


Fig. 9: November 9<sup>th</sup> release of U.S. Drought Monitor for the UCRB

The current 90-day Standardized Precipitation Index (SPI) map, as well as other time periods, show continued improvement in western Colorado (Fig. 8). This, coupled with improved streamflow and soil moisture, has prompted recent discussion of a possible D0 reduction to the current U.S. Drought Monitor map (Fig. 9). The current USDM author has suggested the reduction of D0 in Rio Blanco and Garfield counties and also throughout Grand County, CO. There are currently no disagreements to this suggestion. It has been suggested to completely remove D0 from the western slopes of Colorado (a larger reduction than the initial recommendation by the USDM author), including Moffat County. This is a data sparse area though, and it is difficult to know for sure if this is completely warranted at this time, so the final decision will be left to the USDM author.

Status quo has been recommended for the rest of the UCRB and bordering areas.